2017

Annual IMPACT report 2017: A report by the IMPACT data collection and analysis team

IMPACT Management Team

IMPACT Assessment Team

iMPACT

Instruction Matters: Purdue Academic Course Transformation

2017 Annual Report

PURDUE
UNIVERSITY

EXECUTIVE SUMMARY

From its inception in summer 2011, IMPACT has grown to an institutional transformation program positively impacting every college/school at Purdue and nearly three-quarters of all undergraduates every semester. IMPACT-trained faculty report improvements in their abilities to teach using student-centered approaches, see improved student outcomes, and have more favorable views of their students. Students report supportive class climates and are more successfully navigating courses, including traditional gatekeeper courses—positively influencing time to degree and affordability. Institutional commitments—including ongoing IMPACT training/support and the creation of new active-learning classrooms—are contributing to a culture change at Purdue that emphasizes student-centered teaching and improved student outcomes. Despite positive indicators, IMPACT faces challenges to ongoing sustainability that will require continued inputs at all levels. This report highlights activities, accomplishments, and challenges to date, and provides considerations for maximizing the potential for future sustainability.

INTRODUCTION

The mission of IMPACT is to create student-centered teaching and learning environments by redesigning foundational courses using research-based practices. IMPACT goals emphasize:

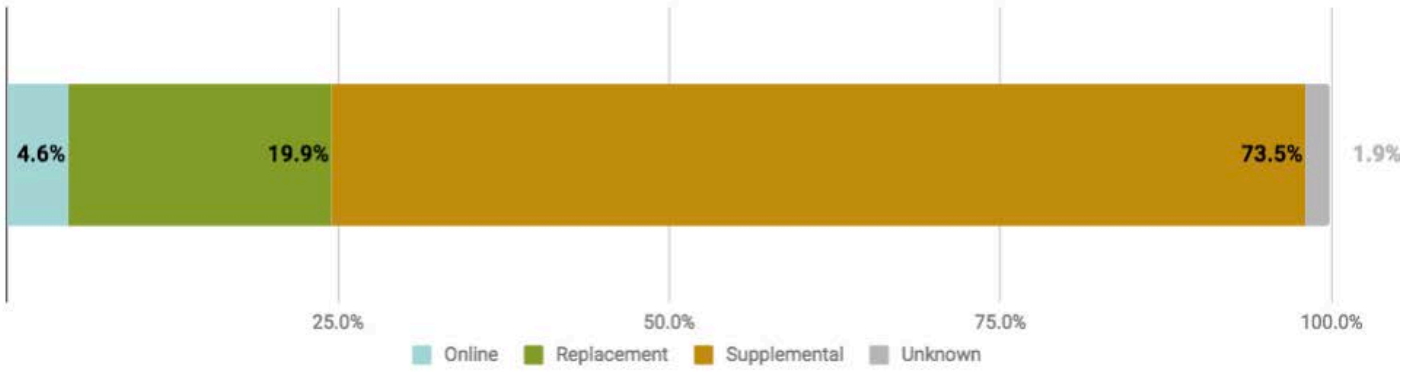
- **Refocusing the campus culture on student-centered pedagogy and student success;**
- **Increasing student engagement, competence, and learning gains;**
- **Focusing course transformation on research-based pedagogies; and**
- **Reflecting, assessing, and sharing results to benefit future courses, students, and institutional culture.**

IMPACT, a faculty development program, uses a cohort-based model built around a strong faculty learning community (FLC). It is a partnership among the CIE, ITaP, Libraries, DE, and ELRC, with support from the President's and Provost's Offices. Staff and faculty from these units work in teams with IMPACT Faculty Fellows to:

- **Identify course-specific learning outcomes;**
- **Map those learning outcomes to course activities and assignments (papers, exams, homework, projects, etc.); and**
- **Select an appropriate transformation model for their particular course that takes into account content, discipline, course size, faculty preferences, and abilities.**

IMPACT faculty are currently using three transformation models[1]. These models and their approximate frequency of use within AY2017 are: 4.6% online only, 19.9% replacement, and 73.5% supplemental.

Figure 1. Usage of Transformation Models Among IMPACT Sections



THE SCOPE OF IMPACT

By Faculty and Courses

IMPACT courses can be found in every College/School at Purdue. IMPACT accomplishments relative to faculty and courses from the first FLC in summer 2011 to the current FLC cohort in fall 2017 include:

- Offering 14 FLCs[2] ;
- Averaging 21 faculty per IMPACT cohort (with a range of 10 to 35)
- Equipping 289 faculty[3] representing all colleges/schools[4] at Purdue with the knowledge, skills, and support to transform their courses to include research-based student-centered pedagogies;
- Transforming 277 unique courses[5] while participating in an FLC;
- Transforming 191 additional unique courses[6] outside Fellow participation in the IMPACT FLC (these are tracked as "IMPACT-Influenced" courses).

Appendix 1 provides a historical list of IMPACT courses, Fellows, and cohorts.

Figure 2. IMPACT Fellows[7]

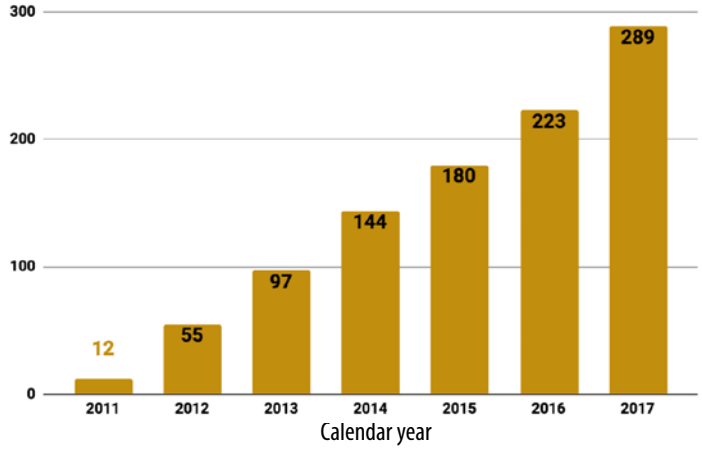


Figure 3. IMPACT Courses[8]

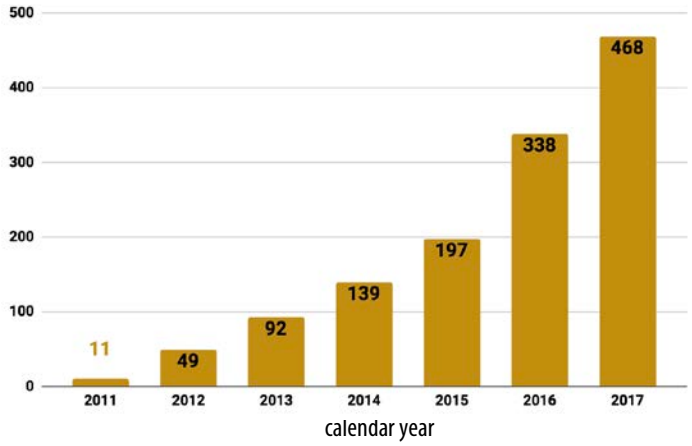
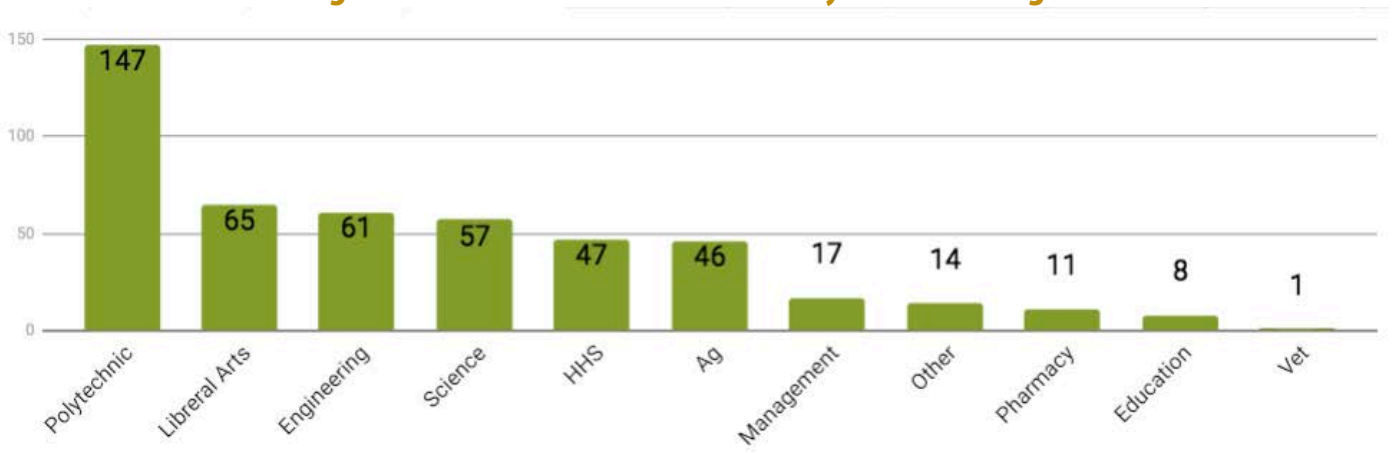


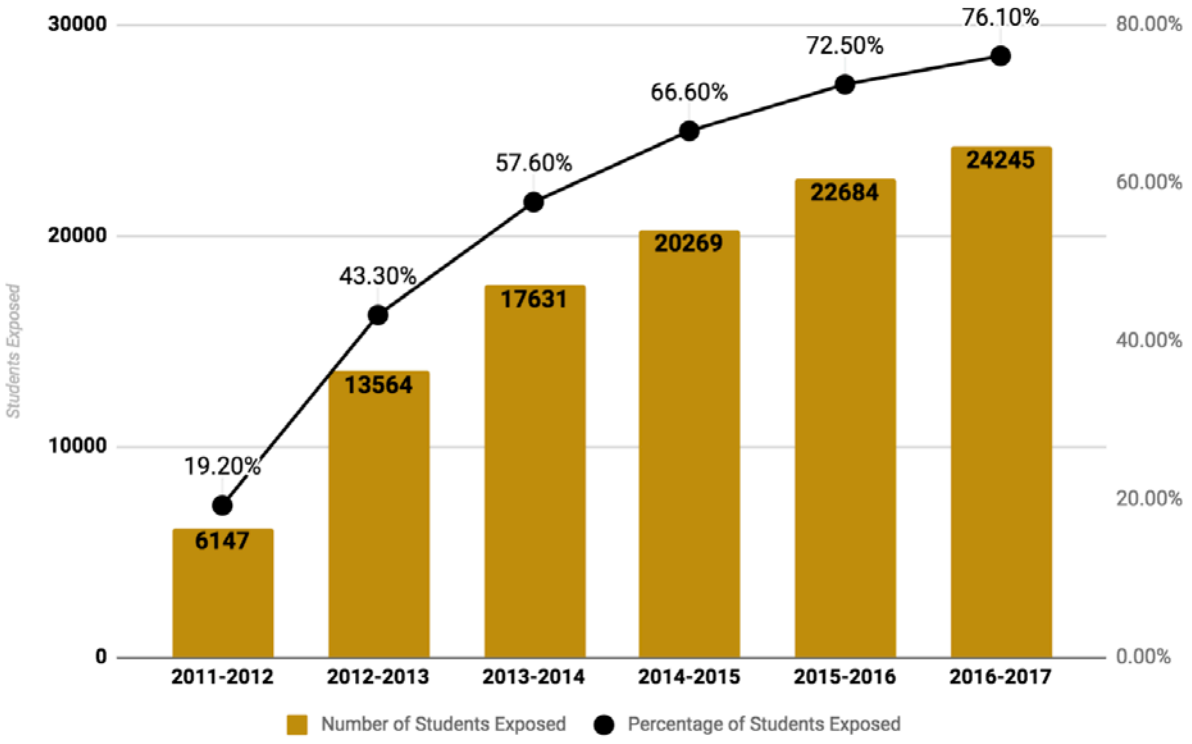
Figure 4. Count of IMPACT Courses by Course College[9]



By Students

IMPACT directly effects a large majority of Purdue undergraduates. From project inception in fall 2011 through summer 2017, a total of 59,392 distinct students took an IMPACT class—that's 70.8% of students registered for at least one course during these terms[10]. Nearly one-fifth of Purdue undergraduates benefited from an IMPACT transformed course during the project's first year of implementation. That number rose steadily so that in AY2017 over three-quarters of all Purdue undergraduates took at least one IMPACT transformed course. Figure 5 shows the counts/proportion of students exposed to IMPACT within each academic year and illustrates the growth in the reach of IMPACT by both percent of undergraduate students impacted and number of courses offered over time.

Figure 5. Rate and Counts of Students exposed to IMPACT, within Academic Years[11]



The number of courses with at least one IMPACT or IMPACT-influenced section offered continues to grow as more faculty participate in IMPACT training and IMPACT faculty apply their training to additional courses. Assuming continued faculty training at current rates, we expect the rate of growth to slow as the number of "new" IMPACT fellows is partially balanced by attrition as current Fellows retire or leave the university. However, with nearly three-quarters of Purdue undergraduates benefiting from an IMPACT influenced course each semester, Purdue seems well on its way to a cultural shift towards student-centered teaching and learning as the norm. IMPACT will need to continue to train and support new and existing faculty and address institutional barriers (as described under "Sustaining Impact" on page 8) in order to maintain and institutionalize this student-centered culture.

KEY FINDINGS FROM ASSESSMENT OF IMPACT

IMPACT Fellow Perceptions[12]

Faculty view IMPACT as a valuable source of professional development that positively impacts both their own teaching practice and student outcomes. Based on pre-participation and post-implementation surveys, IMPACT Fellows report significant increases[13] in both student engagement and their own satisfaction with teaching after implementing their transformed course. They also report significant improvement in their pedagogical practices (including use of technology) and experiences with classroom learning spaces after implementing their IMPACT course. Figures 6-9 below illustrate these reported changes on a six point Likert scale where higher numbers indicate stronger agreement.

Figure 6. IMPACT faculty observed statistically significant increases in student engagement from before their participation to after implementing their IMPACT course.

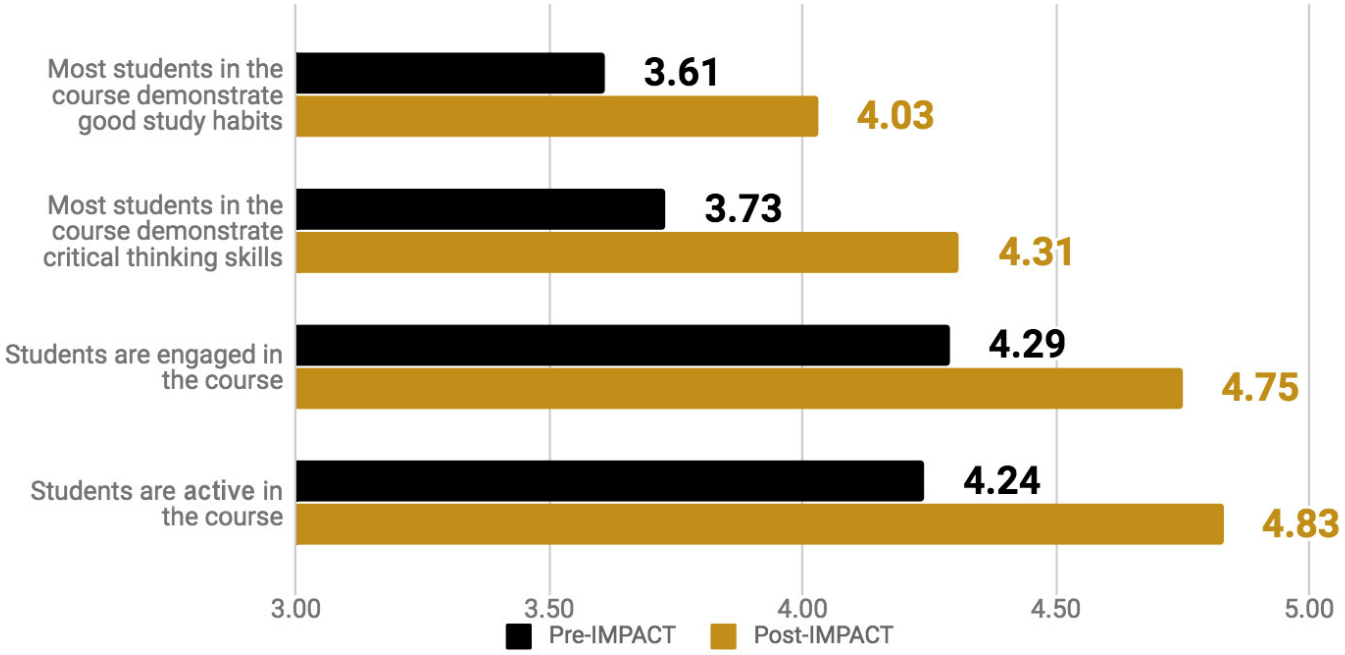


Figure 7. IMPACT faculty report a statistically significant increase in their satisfaction regarding teaching from before their participation to after implementing their IMPACT course.

I am satisfied with …

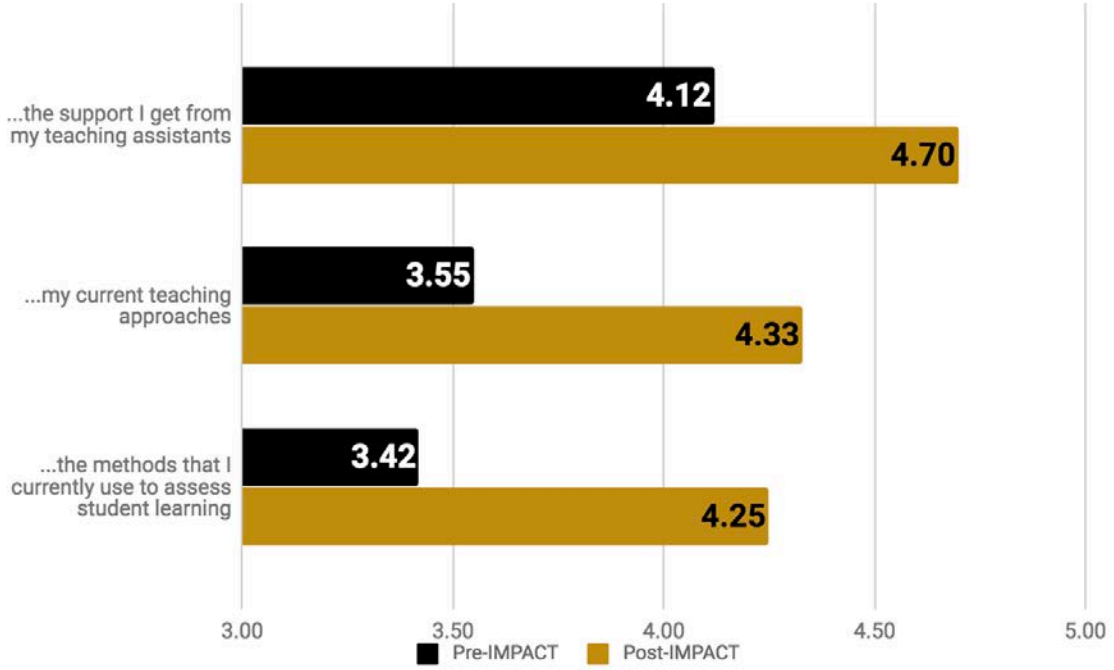


Figure 8. IMPACT faculty report statistically significant improvements in pedagogical practices from before participating in IMPACT and after implementing their IMPACT course.

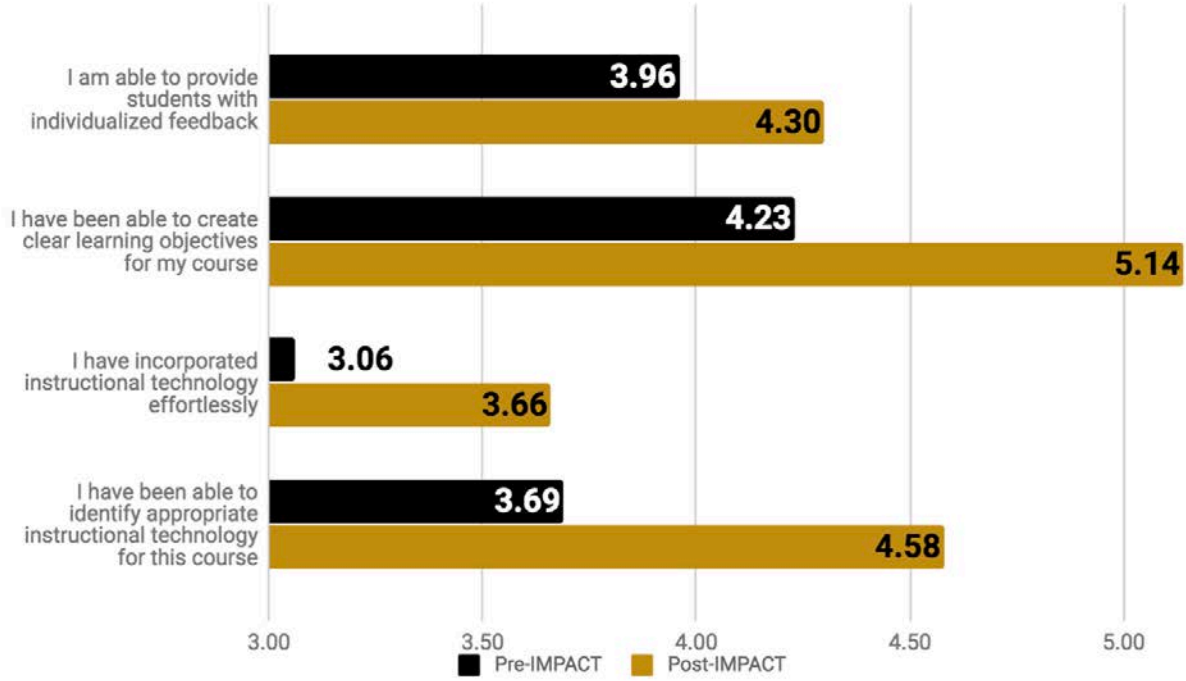
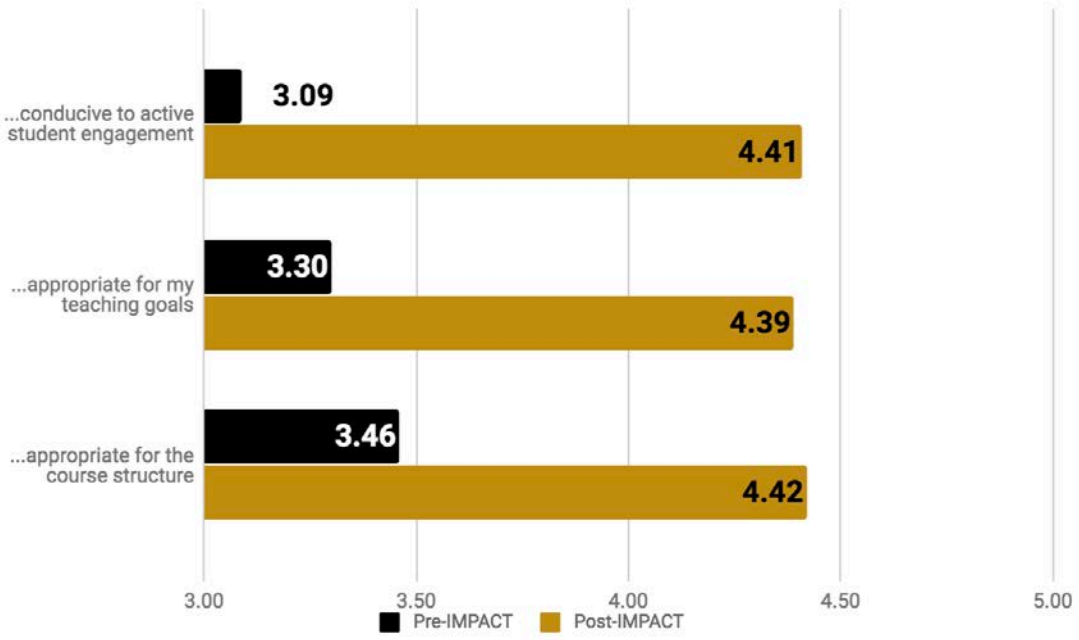


Figure 9. IMPACT faculty experiences in their classroom learning space are significantly improved from before participation to after the implementation of their IMPACT course.
The learning space for this course is...



Student Centeredness

Faculty are successfully implementing student-centered pedagogies in their IMPACT course transformations, as evidenced by student surveys. The student centeredness ratings are based on students' perceptions of the learning climate established by the instructor in the course. As shown in Figure 10, 80.8% of all students who responded to the survey characterized their IMPACT courses as having highly student-centered learning environments. Students rated IMPACT sections using online only models as highly student centered slightly less frequently (62.0%) than IMPACT sections using replacement or supplemental transformation models (84% & 80.3%, respectively)[14]. Similar results are found when examining student-centeredness at the course section level for all models except online only courses (most likely due to low survey response rates in online only sections)[14].

IMPACT transformation models are broad categories, not rigid definitions. There is considerable variation in the way the models are implemented across instructors and courses. Many factors, besides the transformation model, may affect students' perceived level of student-centeredness. Further inquiry will help us better understand the effect of a variety of measurable factors (such as course level, enrollment size, or learning space characteristics) on student perceptions of learning climate.

Figure 10. Student Centeredness by Student and Transformation Model[14]

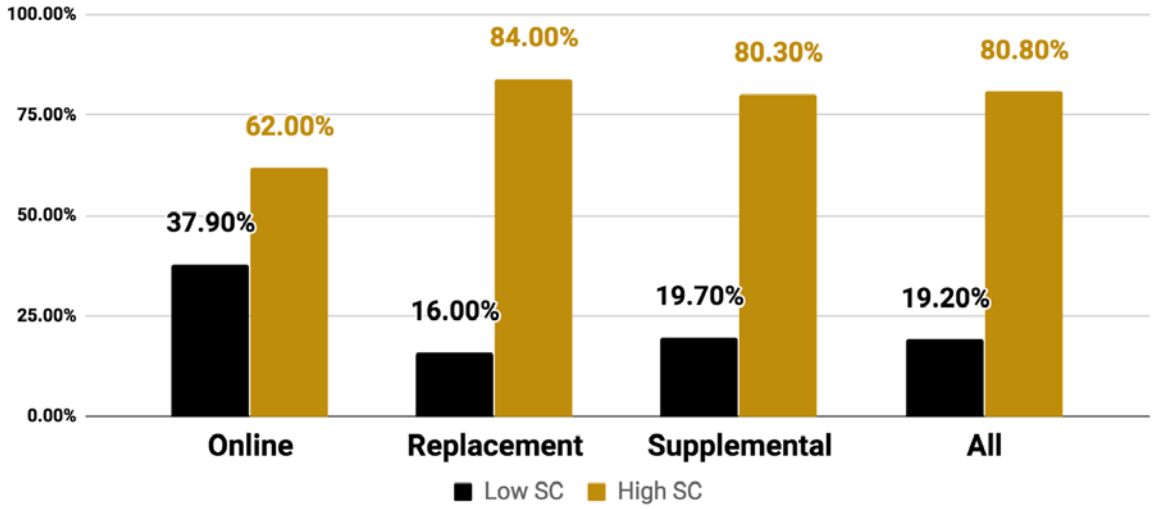
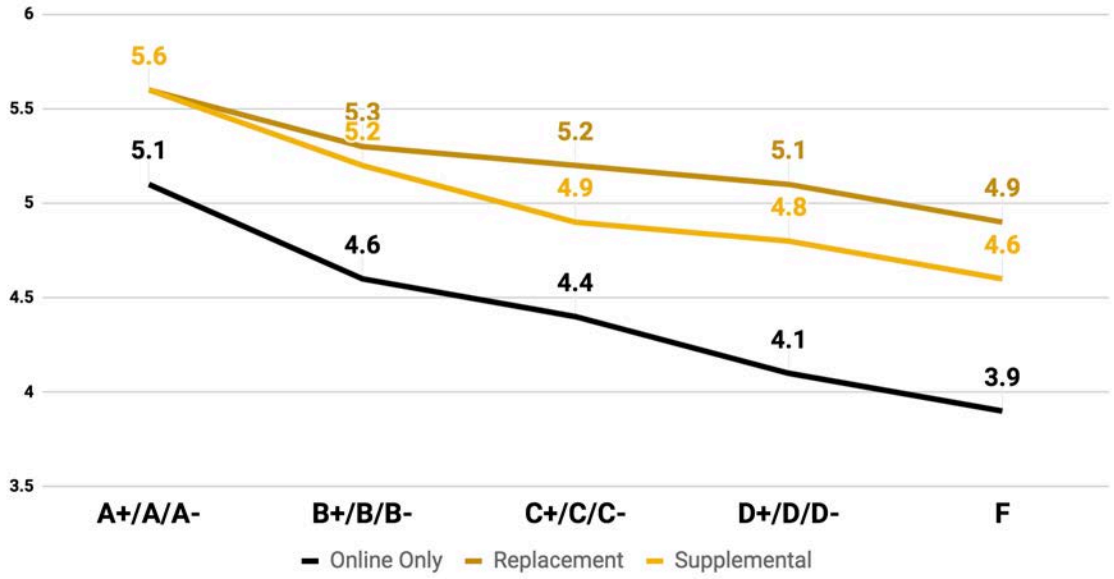


Figure 11 illustrates the relationship between a student's performance in a class and his/her perception of student centeredness. Matching individual cases from the student survey to students' performance, we see small statistically significant positive correlations between students' student centeredness rating and their mean final grade value. Due to variations in grading schemas between courses (and sometimes between sections of the same course) the best uses for mean final grades are within courses and sections.

Figure 11. Mean Student Centeredness Ratings, by Final Grade Group[15]



Student Academic Performance

An initial goal of IMPACT was to increase student academic success and decrease time to degree by transforming gatekeeper courses. Target courses have one or more of the following characteristics:

- High failure: the pre-IMPACT[15] DFW rate for the course is 20% or higher,
- Large: the enrollment within the academic year exceeds 100 students, and
- Foundational: the course number is 29999 or less.

To date, 15 IMPACT courses met the high failure criteria and at least one other criteria, prior to the course being transformed by an IMPACT Fellow. During the 2017 academic year, 12 of those 15 courses offered at least one IMPACT section with the following positive impacts on student success.

- The DFW rate was lower in IMPACT sections for nine of these courses, compared to the pre-IMPACT DFW rate.
- DFW rates decreased an average of 4.8% when compared to the pre-IMPACT DFW rate.
- The observed decreased DFW rates correspond to an additional 404 students passing their course with a C- or higher in AY2017.

These data support a positive role of IMPACT in increasing student academic success and decreasing time to degree, since students will be able to move forward without the need to retake these foundational courses.

Learning Spaces

Many student-centered teaching approaches are facilitated by access to active learning classroom spaces. The fall 2017 opening of the Wilmeth Active Learning Center (WALC) demonstrates institutional commitment to active learning experiences. WALC extends the availability of existing institutionally scheduled[16] classroom spaces designated as active learning. In academic year 2017, before the opening of the WALC, 18.9% of students' registrations[17] in IMPACT courses included use of an institutionally controlled active learning space, compared to only 12.4% of non-IMPACT courses. We anticipate these rates to increase due to scheduling more courses in the WALC.

As part of an ongoing study of faculty perceptions of the WALC, CIE and ELRC surveyed all faculty on their self-efficacy for using student-centered pedagogy in the WALC and their perceptions of the WALC's ability to support student-centered instruction. Faculty perceptions were collected prior to the first week of classes and will be collected again at the end of the fall 2017 semester. Of the 93 faculty who responded to the survey, 37 have participated in IMPACT. These 37 faculty were overwhelmingly positive regarding their self-efficacy for teaching, their self-efficacy for using student-centered pedagogy in the WALC, and their perception that the WALC can support their use of student-centered pedagogy. IMPACT faculty responses to the initial survey are displayed in the following page.

Figure 12. Faculty Teaching in WALC Are Highly Confident in Their Abilities to Teach in WALC

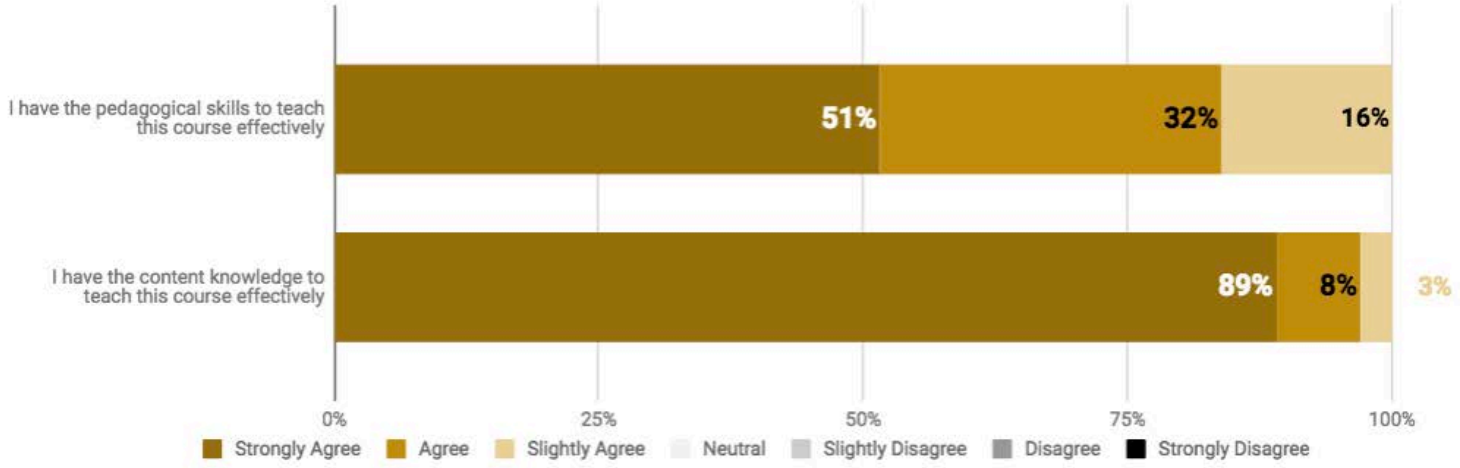


Figure 12. Faculty Report: In My WALC Classroom I Expect That I Will…

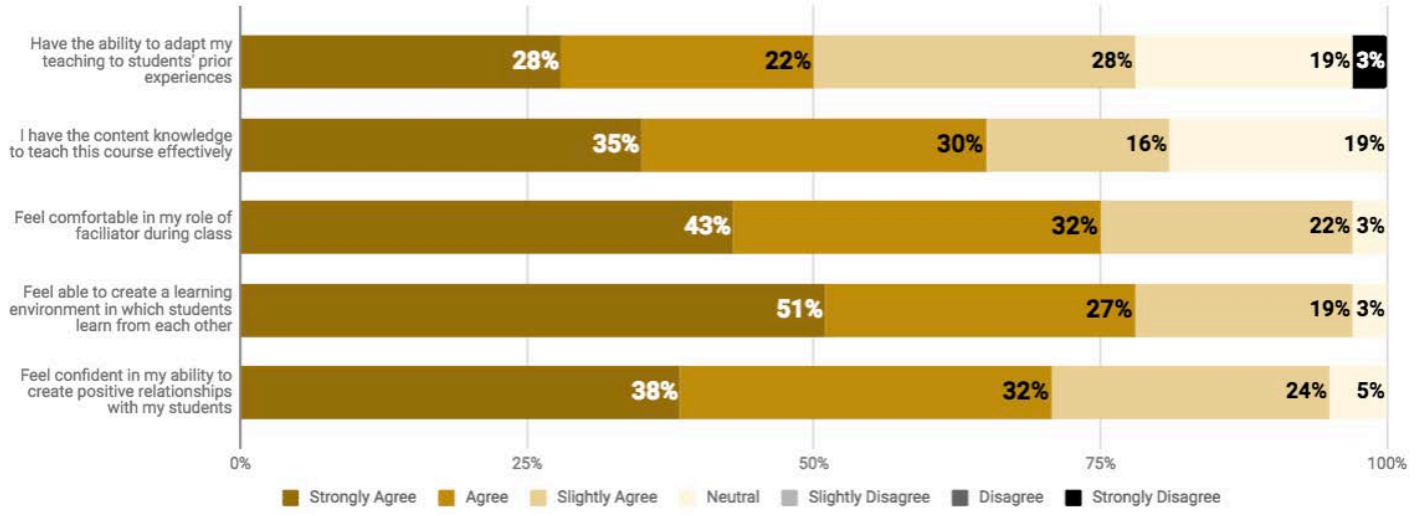
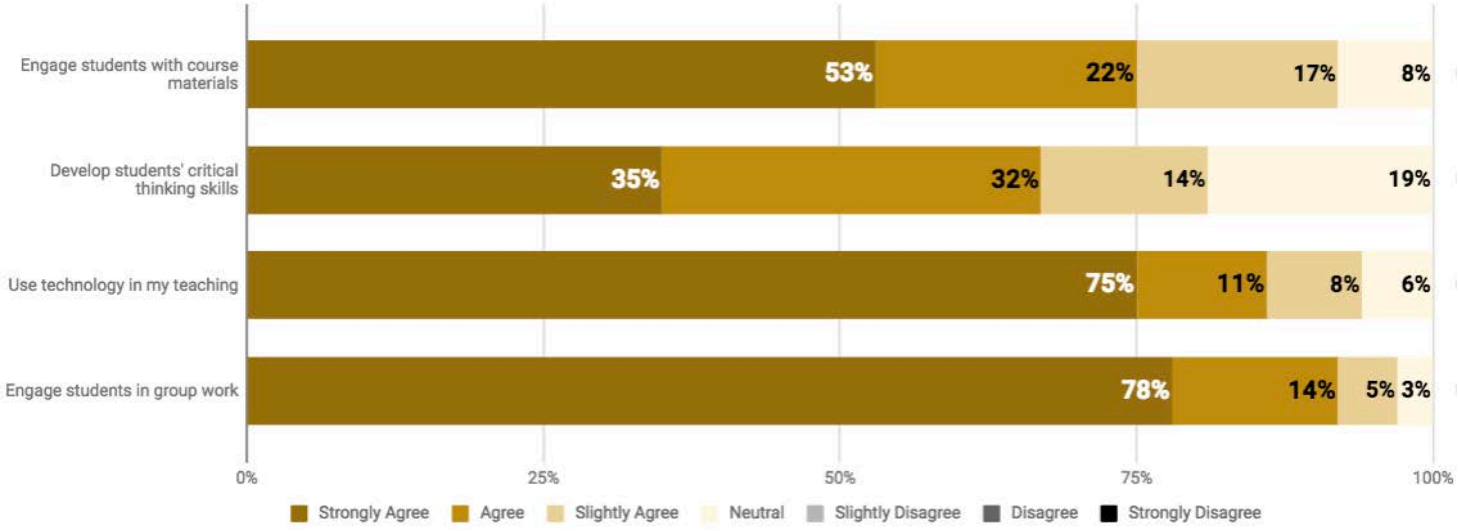
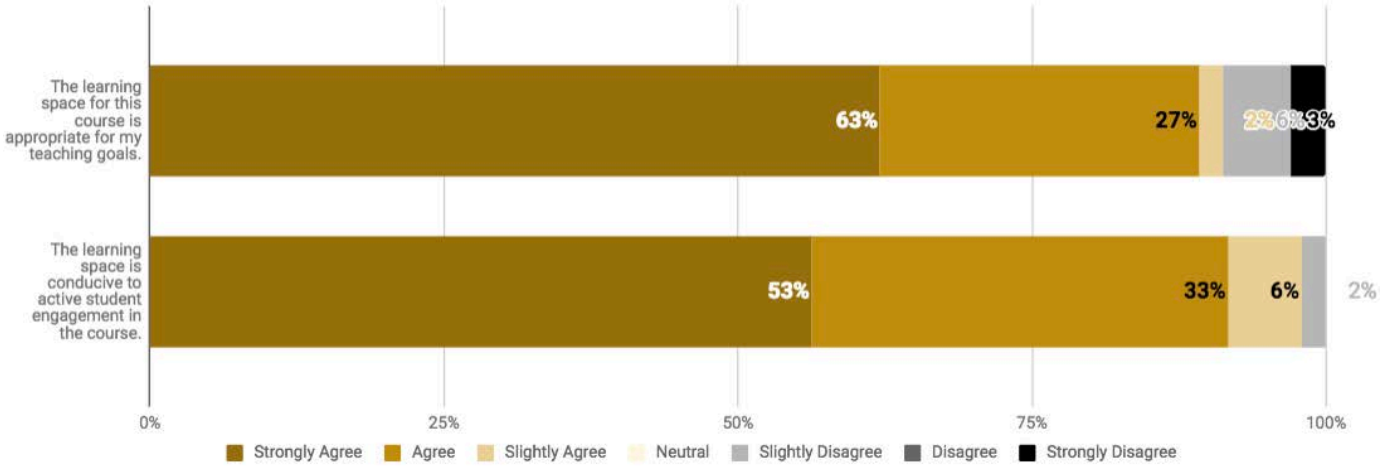


Figure 13. Faculty Report: In My WALC Classroom I Expect That it Will Be Easy to…



IMPACT partners are providing support for instructors teaching in the Wilmeth Active Learning Center (WALC). An open house, held the week before classes began (August 14 to 18, 2017), invited instructors to visit the WALC classroom they would teach in during the fall 2017 semester. Staff from the Center for Instructional Excellence, ITaP, and the Purdue Libraries were on-hand to orient instructors to the classrooms, including consulting on active learning pedagogy, and demonstrating educational technology. Of the 151 instructors attending the open house, 55 completed a survey about the open house and their perceptions of the classroom in which their course is scheduled for fall 2017. As shown in figure below**,** 85% of the instructors that completed the survey indicated that the active learning classroom in which they would teach in fall 2017 would and help foster student engagement, support their teaching.

Figure 14. Faculty Perceptions of WALC Classrooms After Open House Training



Informed by the data collected from the open house survey, TLT formed an active learning community of practice (ALCOP). Thirty-eight instructors who teach in active learning spaces on campus attended the initial ALCOP meeting. During this session, the instructors identified active learning topics for further instruction and engagement, including:

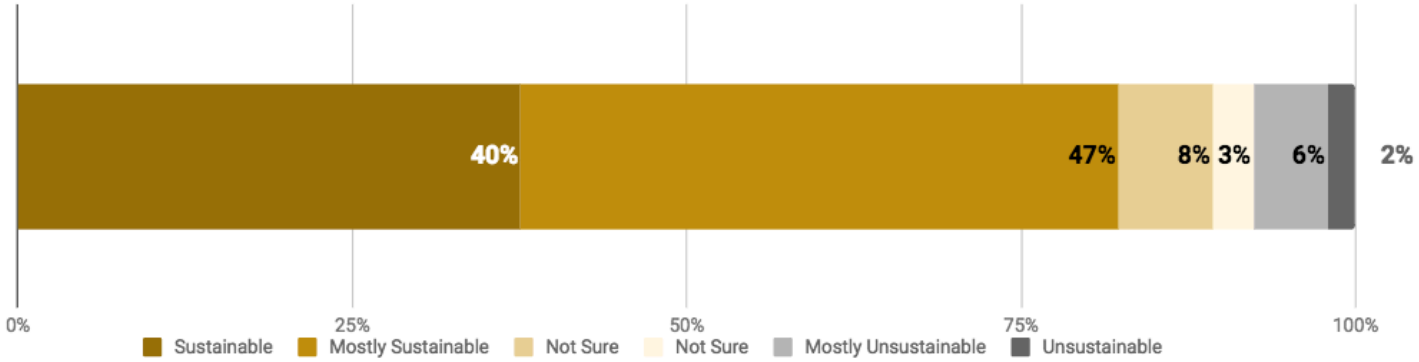
1. Sharing ideas and experiences around active learning in various disciplines and types of courses;
2. Demonstrating and learning from examples of teaching strategies;
3. Brainstorming and problem solving in instructor groups; and
4. Learning about the latest technologies, pedagogical strategies, and research on active learning.

In response to feedback from the initial group, 32 instructors registered to participate in a “teaching trios” program, in which three instructors teaching in the same, or a similar, classroom visit each other’s classes and give each other feedback based on their observation.

Sustaining IMPACT

Although faculty recognize the positive impacts of student-centered pedagogies on both their students and their own practice, IMPACT Fellow responses on longitudinal surveys (n=93) point to a need for further inputs and modifications at the institutional level to sustain these changes. For example, fewer than half the responding Fellows (47**%**) indicated they felt “completely supported” by their department and colleagues in the course transformation process.

Figure 15. Faculty Perceptions of Course Sustainability



Responses related to sustainability and transferability are more complex, but likewise suggest areas for continued attention. Specifically, while a mere 5% of the faculty characterized their transformation as

"unsustainable" or "mostly unstainable," only 40**%** believe their course transformation is "sustainable," when sustainability was defined as "changes that you feel you could maintain without exerting a SIGNIFICANT amount of additional effort beyond what was required to transform and initially implement the course." Faculty reported encountering a number of challenges to sustainability. Those most often cited (along with the percentage of faculty identifying this challenge) include:

- Lack of time allocated for teaching duties (30%)
- Lack of teaching assistants (25%)
- Lack of access to appropriate learning spaces (23%)
- Negative reactions from students (23%)

SUMMARY AND RECOMMENDATIONS

IMPACT is positively influencing teaching and learning at Purdue. The nearly 300 IMPACT-trained faculty, representing all colleges on campus, report improvements in their own teaching self-efficacy and satisfaction, as well as improved student outcomes and more favorable views of their students. IMPACT faculty are successfully making their courses more student-centered without removing the rigor for which Purdue is known. As a result, more students are successfully navigating courses, including traditional gatekeeper courses, thus decreasing student time to degree and cost. With nearly three quarters of all undergraduates enrolling in an IMPACT course each semester, the reach and influence of IMPACT is large. Institutional commitments—including ongoing IMPACT training/support and the creation of new active-learning classrooms—are contributing to a culture change at Purdue that emphasizes student-centered teaching and learning.

While IMPACT has achieved many of its goals for faculty development and student engagement, sustained institutional change will require continued support and changes in institutional practices governing teaching and learning. Increasing accessibility to the program could produce long-term culture change surrounding student-centered teaching and learning, if accompanied by appropriate shifts in the way departments, units, and colleges view tenure and promotion. The partnership and work represented by IMPACT drives ongoing excellence at Purdue and keeps Purdue at the forefront of transformative education nationally and globally.

Appendix 1. Courses, Fellows, and IMPACT Cohorts

Course	Fellow	Cohort
AAE20400	Yu, Wenbin	201420
AAE25100	Grant, Michael J.	201620
AAE25100	Marais, Karen	201310
AAE33300	Alexeenko, Alina	201420
AAE35200	Sangid, Michael D.	201410
AAE35200	Tomar, Vikas	201310
ABE20500	Mcmillan, Sara K.	201710
AD12500	Vanzee, Lisa A.	201520
AD20100	Vickers, Heather G.	Influenced
AD25500	Vickers, Heather G.	201520
AD38300	Dossin, Catherine	201520
AD38400	Dossin, Catherine	Influenced
AGEC20300	Gunderson, Michael A.	201320
AGEC21700	Deboer, Lawrence P.	201320
AGEC32700	Katare, Bhagyashree	201620
AGEC32700	Yeager, Elizabeth A.	201420
AGEC35200	Dobbins, Craig L.	201420
AGEC41100	Dobbins, Craig L.	201420
AGEC43000	Gunderson, Michael A.	Influenced
AGEC49800	Gunderson, Michael A.	Influenced
AGR11700	Neal, Jonathan J.	Influenced
AGR20100	Morris, Pamala V.	201410
AGRY12000	Bowling, Laura C.	201620
AGRY25500	Graveel, John G.	201210
AGRY25500	Mashtare, Michael L.	201710
AGRY25500	Van Scoyoc, George E.	201210
AGRY32000	Dilkes, Brian P.	201210
AGRY33700	Bowling, Laura C.	Influenced
AMST10100	Fouche, Rayvon D.	201610
AMST20100	Fouche, Rayvon D.	Influenced
AMST60100	Fouche, Rayvon D.	Influenced
ANSC10200	Karcher, Elizabeth L.	Influenced
ANSC10200	Russell, Mark A.	201410
ANSC39000	Karcher, Elizabeth L.	Influenced
ANSCxxxxx	Karcher, Elizabeth L.	201720
ANTH20100	Lindsay, Ian C.	201420
ANTH20500	Zanotti, Laura C.	201520
ANTH39200	Zanotti, Laura C.	Influenced
ASTR26400	Lang, Rafael F.	201810
AT10200	Wulle, Bernard W.	Influenced
AT14400	Dillman, Brian G.	201610
AT32700	Keller, Julius C.	201810
AT35900	Hubbard, Sarah M.	201720
AT35xxx	Wulle, Bernard W.	201810
AT36302	Stanley, David L.	201530
AT40200	Ropp, Timothy D.	201720
AT41600	Suckow, Michael W.	201720
AT48700	Suckow, Michael W.	Influenced
BCHM30700	Hart, Orla M.	201620
BCHM30900	Hart, Orla M.	Influenced
BCM10001	Koch, Daphene C.	201320
BCM10001	Morgan, Patricia C.	201720
BCM17500	Cabral, Jessica E.	201530
BCM21500	Koch, Daphene C.	201620
BCM27500	de Cresce El Debs, Luciana	201810
BCM30101	Dib, Hazar N.	Influenced

Course	Fellow	Cohort
BCM34000	Benhart, Bradley L.	Influenced
BCM34500	Jenkins, James L.	Influenced
BCM35501	Benhart, Bradley L.	Influenced
BCM36000	Zimpfer, Mark D.	Influenced
BCM37500	Dib, Hazar N.	201620
BCM41700	Koch, Daphene C.	Influenced
BCM45500	Orczyk, Joseph J.	Influenced
BCM45701	Jenkins, James L.	201610
BCM46200	Zimpfer, Mark D.	201720
BCM47500	Orczyk, Joseph J.	201420
BCM48701	Benhart, Bradley L.	201710
BIOL11000	Bos, David H.	201420
BIOL11000	Friedman, Alan M.	201810
BIOL11100	Bos, David H.	Influenced
BIOL11200	Bos, David H.	201420
BIOL11200	Friedman, Alan M.	201810
BIOL11300	Bos, David H.	Influenced
BIOL13100	Pelaez, Nancy	201210
BIOL14500	Gardner, Stephanie M.	201810
BIOL19500	Gardner, Stephanie M.	201810
BIOL23000	Bartlett, Edward L.	201310
BIOL24100	Springer, Joshua C.	201510
BIOL32800	Gardner, Stephanie M.	201410
BIOL58010	Pelaez, Nancy	Influenced
BME39500	Rundell, Ann E.	201220
BME49000	Rundell, Ann E.	Influenced
BME59500	Martinez, Ramses	Influenced
BME69500	Nauman, Eric A.	Influenced
BMS13500	Nour, Abdelfattah Y.	201720
BMS13600	Nour, Abdelfattah Y.	201810
BTNY11000	Goldsbrough, Peter B.	201720
BTNY11000	Pruitt, Robert E.	201720
BTNY30100	Loesch-Fries, Loretta S.	201220
BTNY30100	Martyn, Raymond D.	201220
BTNY30100	Woloshuk, Charles P.	201220
CDFS21000	Friedman, Elliot M.	201420
CDFS21000	Taylor, Zoe E.	201420
CDFS28000	Watkins, Natasha D.	201420
CDFS31200	Friedman, Elliot M.	Influenced
CDFS33200	Taylor, Zoe E.	Influenced
CE22200	Cai, Hubo	201610
CE23100	Zavattieri, Pablo D.	201410
CE31100	Qu, Ming	201810
CE33100	Weiss, William J.	201410
CE34000	Troy, Cary D.	201410
CE34300	Troy, Cary D.	201410
CE35000	Blatchley, Ernest R.	201420
CE35000	Hua, Inez	201410
CE35000	Nies, Loring F.	Influenced
CE35500	Nies, Loring F.	201220
CE36100	Fricker, Jon D.	201710
CE39800	Ukkusuri, Satish V.	201410
CE47000	Liu, Judy	201510
CE47400	Prakash, Arun	201610
CE52200	Cai, Hubo	Influenced
CE54300	Troy, Cary D.	Influenced

Course	Fellow	Cohort
CE57000	Prakash, Arun	Influenced
CE59700	Cai, Hubo	Influenced
CEM20100	Cai, Hubo	201610
CGT10101	Connolly, Patrick E.	201530
CGT11000	Miller, Craig L.	Influenced
CGT11800	Garcia, Esteban	201530
CGT14100	Morales, Carlos R.	201530
CGT16300	Miller, Craig L.	201220
CGT17207	Vorvoreanu, Mihaela	Influenced
CGT17208	Vorvoreanu, Mihaela	Influenced
CGT21500	Benes, Bedrich	201620
CGT21500	Whittinghill, David M.	201320
CGT21708	Vorvoreanu, Mihaela	Influenced
CGT24100	Hassan, Raymond P.	201420
CGT25600	Vorvoreanu, Mihaela	201320
CGT27207	Vorvoreanu, Mihaela	Influenced
CGT27208	Parsons, Paul	201720
CGT27208	Vorvoreanu, Mihaela	Influenced
CGT32100	Garcia, Esteban	Influenced
CGT34000	Hassan, Raymond P.	Influenced
CGT34100	Adamo-Villani, Nicoletta	201620
CGT34500	Whittinghill, David M.	Influenced
CGT35300	Chen, Yingjie	201420
CGT35300	Glotzbach, Ronald J.	201710
CGT35600	Glotzbach, Ronald J.	Influenced
CGT37000	Chen, Yingjie	Influenced
CGT37108	Vorvoreanu, Mihaela	Influenced
CGT37207	Vorvoreanu, Mihaela	Influenced
CGT37208	Vorvoreanu, Mihaela	Influenced
CGT39000	Chen, Yingjie	Influenced
CGT39000	Hassan, Raymond P.	Influenced
CGT42300	Mueller, Amy B.	201810
CGT44200	Hassan, Raymond P.	Influenced
CGT44500	Whittinghill, David M.	Influenced
CGT45600	Chen, Yingjie	201420
CGT51100	Chen, Yingjie	Influenced
CGT51200	Vorvoreanu, Mihaela	Influenced
CGT51300	Chen, Yingjie	Influenced
CGT58100	Garcia, Esteban	Influenced
CGT58100	Huston, Davin H.	Influenced
CHE20500	Boudouris, Bryan W.	201520
CHE21100	Boudouris, Bryan W.	Influenced
CHE30600	Martinez Sainz, Enrico	201520
CHE34800	Martinez Sainz, Enrico	201810
CHE43500	Martinez Sainz, Enrico	Influenced
CHM11100	Towns, Marcy H.	Influenced
CHM11200	Towns, Marcy H.	Influenced
CHM11500	Towns, Marcy H.	201210
CHM11600	Davidson, Amy L.	201210
CHM11600	Simpson, Garth J.	201510
CHM11600	Wasserman, Adam	201510
CHM12600	Wirth, Mary J.	201210
CHM12901	Tantama, Mathew C.	201810
CHM22400	Wirth, Mary J.	Influenced
CHM25500	Aditya, Animesh V.	Influenced
CHM32100	Wirth, Mary J.	Influenced
CHM32300	Wirth, Mary J.	Influenced
CHM37000	Huang, Libai	201610
CHM37400	Huang, Libai	Influenced

Course	Fellow	Cohort
CHM62100	Simpson, Garth J.	Influenced
CHM62900	Wirth, Mary J.	Influenced
CLPH49000	Isaacs, Alex N.	201810
CLPH49000	Miller, Monica L.	201810
CLPH87200	Kaakeh, Yaman	201310
CM10000	Morgan, Patricia C.	Influenced
CNIT10500	Ravai, Guity	Influenced
CNIT13600	Laux, Dawn D.	Influenced
CNIT14100	Morales, Carlos R.	201530
CNIT15500	Ravai, Guity	201410
CNIT15501	Ravai, Guity	201410
CNIT17500	Ravai, Guity	Influenced
CNIT17600	Hands, Nicole M.	Influenced
CNIT17600	Hansen, Raymond A.	201530
CNIT18000	Barlow, Victor M.	201530
CNIT24000	Yang, Baijian	Influenced
CNIT24200	Yang, Baijian	201510
CNIT27000	Hands, Nicole M.	201720
CNIT27200	Laux, Dawn D.	Influenced
CNIT28000	Magana, Alejandra J.	201410
CNIT32000	Ngambeki, Busiime I.	201720
CNIT37200	Rayz, Julia M.	Influenced
CNIT39200	Rayz, Julia M.	201710
CNIT45500	Rawles, Phillip T.	201710
CNIT47000	Hands, Nicole M.	Influenced
CNIT48101	Whittinghill, David M.	Influenced
CNIT49900	Whittinghill, David M.	201320
COM10000	Deutsch, Pamela G.	201520
COM11400	Natt, Jane G.	201520
COM20400	Boyd, Joshua E.	201520
COM21700	Morgan, Melanie	201410
COM25300	Boyd, Joshua E.	Influenced
COM30300	Deutsch, Pamela G.	Influenced
COM31400	Deutsch, Pamela G.	Influenced
COM31500	Deutsch, Pamela G.	Influenced
COM31800	Collins, William B.	201210
COM32400	Morgan, Melanie	Influenced
COM32500	Faris, Jeralyn L.	201410
COM33200	Osman, Douglas C.	201510
COM49500	Boyd, Joshua E.	Influenced
CS11000	Crowe, Marta A.	201810
CS11000	McFall, Gary T.	201220
CS15900	Crum, William N.	201220
CS17700	McFall, Gary T.	Influenced
CS23500	McFall, Gary T.	201220
CS30700	Turkstra, Jeffrey A.	201810
CSR20000	Harmon, Sarah	Influenced
CSR30000	Harmon, Sarah	201610
CSR31500	Acharya, Lalatendu	201620
CSR34400	Dale, Anita K.	201810
CSR40400	Liu, Sandra S.	201610
CSR41500	Liu, Sandra S.	Influenced
CSR59000	Liu, Sandra S.	201610
CSR68700	Liu, Sandra S.	Influenced
EAPS10400	Michalski, Greg M.	201420
EAPS10600	Freed, Andrew M.	201720
EAPS10900	Tung, Wen-Wen	Influenced
EAPS11100	Haq, Saad S.	201420
EAPS30900	Tung, Wen-Wen	201620

Course	Fellow	Cohort
EAPS31200	Shepardson, Daniel P.	201620
EAPS32700	Welp-Smith, Lisa R.	201610
EAPS50700	Tung, Wen-Wen	Influenced
EAPS50900	Tung, Wen-Wen	Influenced
EAPS51500	Tung, Wen-Wen	Influenced
EAPS59100	Tung, Wen-Wen	Influenced
EAS10400	Michalski, Greg M.	201420
EAS11100	Haq, Saad S.	201420
EAS30900	Tung, Wen-Wen	201620
EAS31200	Shepardson, Daniel P.	201620
EAS32700	Welp-Smith, Lisa R.	201610
ECE20100	Peroulis, Dimitrios	201220
ECE26400	Lu, Yung-Hsiang	201310
ECE27000	Brown, Cordelia M.	201220
ECE27000	Meyer, David G.	201220
ECE29595	Peroulis, Dimitrios	Influenced
ECE30500	Bermel, Peter A.	201610
ECE31100	Melloch, Michael R.	201710
ECE36200	Meyer, David G.	201220
ECE36900	Bagchi, Saurabh	201320
ECE47700	Meyer, David G.	Influenced
ECE59500	Peroulis, Dimitrios	Influenced
ECE69500	Bermel, Peter A.	Influenced
ECET12000	Huston, Davin H.	201530
ECET12000	Richards, Grant P.	201320
ECET17700	Herrick, Robert J.	201410
ECET17900	Richardson, Jeffrey J.	201510
ECET22400	Honchell, Jeffrey W.	201520
ECET22400	Huston, Davin H.	Influenced
ECET22900	Widmer, Neal S.	201520
ECET27900	Huston, Davin H.	Influenced
ECET30201	Richards, Grant P.	Influenced
ECET32100	Mcnally, Helen A.	201710
ECET32700	Mcnally, Helen A.	Influenced
ECET35901	Huston, Davin H.	Influenced
ECET38001	Donaldson, Shirl E.	201520
ECET38001	Panigrahi, Suranjan	Influenced
ECET43000	Berry, Frederick C.	201710
ECET43100	Berry, Frederick C.	201710
ECET46000	Berry, Frederick C.	Influenced
ECET46100	Berry, Frederick C.	Influenced
ECET49900	Panigrahi, Suranjan	201420
ECET49900	Richards, Grant P.	Influenced
ECON21000	Blanchard, Kelly H.	201310
ECON21000	Van Kammen, Benjamin J.	201420
ECON25100	Blanchard, Kelly H.	Influenced
ECON32500	Van Kammen, Benjamin J.	Influenced
ECON34000	Van Kammen, Benjamin J.	Influenced
ECON36000	Van Kammen, Benjamin J.	Influenced
EDCI27000	Newby, Timothy J.	201220
EDCI56000	Newby, Timothy J.	Influenced
EDCI59100	Asunda, Paul A.	Influenced
EDPS10500	Hurt, Sheila F.	201410
EDPS23500	Yough, Michael S.	201320
EDPS26500	Begeske, Jasmine L.	201420
EDPS49100	Downing, Brenda K.	201220
EDST20010	Della Sala, Matthew R.	201520
EEE25000	Whelton, Andrew J.	201710
EEE35000	Blatchley, Ernest R.	201420

Course	Fellow	Cohort
EEE35000	Hua, Inez	201410
EEE35500	Nies, Loring F.	201220
EEE39500	Zanotti, Laura C.	Influenced
EEE48000	Nies, Loring F.	Influenced
EEE56000	Nies, Loring F.	Influenced
ENGL10600	Bay, Jennifer L.	201520
ENGL20300	Bay, Jennifer L.	Influenced
ENGL26400	Duran, Angelica A.	201810
ENGL27600	White, Paul W.	201810
ENGL39300	Zanotti, Laura C.	Influenced
ENGL41100	Allen, Emily L.	Influenced
ENGL46300	Duran, Angelica A.	201810
ENGR10300	Meyer, David G.	Influenced
ENGR13100	Nies, Loring F.	Influenced
ENGR14200	Nauman, Eric A.	Influenced
ENGR16100	Nauman, Eric A.	Influenced
ENGT18000	Huston, Davin H.	201530
ENGT18000	Richards, Grant P.	Influenced
ENTM10500	Neal, Jonathan J.	201410
ENTM12800	Jennings, Lauren M.	201810
ENTM20600	Oseto, Christian Y.	201420
ENTM21000	Mason, Linda J.	201520
ENTM22810	Stamper, Trevor I.	201620
ENTM22820	Stamper, Trevor I.	201710
ENTM22830	Stamper, Trevor I.	201520
ENTM29500	Neal, Jonathan J.	Influenced
ENTM31100	Kaplan, Ian	201510
ENTM33500	Oseto, Christian Y.	Influenced
FN30300	Burgess, John R.	201310
FN33000	Bailey, Regan K.	201810
FNR20100	Zischke, Mitchell T.	201810
FNR34100	Flaherty, Elizabeth A.	201620
FNR34800	Flaherty, Elizabeth A.	201620
FNR48800	Prokopy, Linda S.	201610
FS36100	Oliver, Haley F.	Influenced
FS36200	Oliver, Haley F.	201310
FS55301	Oliver, Haley F.	Influenced
FS62000	Oliver, Haley F.	Influenced
GER28000	Sundquist, John D.	201510
GRAD59000	Lynch, Cyndi D.	201420
GS10000	Kauper, Nancy L.	201610
GS10100	Kauper, Nancy L.	Influenced
GS17700	Downing, Brenda K.	201220
GS29000	Downing, Brenda K.	201220
HDFS21000	Friedman, Elliot M.	201420
HDFS21000	Taylor, Zoe E.	201420
HDFS28000	Watkins, Natasha D.	201420
HDFS31200	Friedman, Elliot M.	Influenced
HDFS33200	Taylor, Zoe E.	Influenced
HIST10300	Mitchell, Silvia Z.	201610
HIST10400	Fleetham, Deborah L.	201220
HIST10400	Gray, William G.	201410
HIST30200	Fleetham, Deborah L.	Influenced
HIST30200	Mitchell, Silvia Z.	Influenced
HIST31700	Fleetham, Deborah L.	Influenced
HIST31800	Fleetham, Deborah L.	Influenced
HONR19901	Allen, Emily L.	201320
HONR19902	Allen, Emily L.	Influenced
HONR29900	Stonebraker, Ilana R.	Influenced

Course	Fellow	Cohort
HONR39900	Fouche, Rayvon D.	Influenced
HTM21200	Day, Gordon J.	201420
HTM29100	Behnke, Carl A.	201620
HTM29101	Behnke, Carl A.	201620
HTM29102	Behnke, Carl A.	201620
HTM37000	Day, Gordon J.	Influenced
HTM39900	Day, Gordon J.	Influenced
HTM46200	Day, Gordon J.	Influenced
HTM49200	Behnke, Carl A.	201620
HTM49900	Sydnor, Sandra B.	201520
HTM53100	Day, Gordon J.	Influenced
IE33000	Nateghi, Roshanak	201810
IE33600	Aggarwal, Vaneet	201810
IE34300	Johnson, David R.	201710
IE38600	Duffy, Vincent G.	Influenced
IE48600	Duffy, Vincent G.	201620
IE49000	Martinez, Ramses	201710
IE55800	Duffy, Vincent G.	Influenced
IE59000	Martinez, Ramses	Influenced
IT10400	Schmidt, Edie K.	201320
IT22600	Clase, Kari L.	201410
IT22700	Clase, Kari L.	201420
IT23000	Scott, Regena L.	201310
IT34500	Elliott, Stephen J.	201510
IT43400	Scott, Regena L.	Influenced
IT44600	Laux, Chad M.	201620
IT45000	Sutton, Mathias J.	201610
IT49000	Laux, Chad M.	Influenced
IT50700	Clase, Kari L.	Influenced
IT50700	Sutton, Mathias J.	Influenced
IT50800	Clase, Kari L.	Influenced
IT53500	Clase, Kari L.	Influenced
IT54000	Elliott, Stephen J.	Influenced
IT54500	Elliott, Stephen J.	Influenced
IT57100	Clase, Kari L.	Influenced
IT58100	Elliott, Stephen J.	Influenced
IT58100	Scott, Regena L.	Influenced
IT59000	Laux, Chad M.	Influenced
IT62100	Elliott, Stephen J.	Influenced
LA11700	Barbarash, David M.	201710
LA32500	Appold, Melinda M.	201710
MA13700	Max, Brooke M.	Influenced
MA13800	Max, Brooke M.	Influenced
MA13900	Figueroa, Renee J.	201520
MA13900	Max, Brooke M.	201810
MA15300	Devlin, Patrick M.	201510
MA15400	Delworth, Timothy J.	201210
MA15555	Delworth, Timothy J.	201520
MA15800	Norris, David M.	201510
MA16010	Delgado, Huimei	201510
MA16020	Davis, Owen K.	201520
MA16100	Wiles, Benjamin C.	201410
MA16200	Chen, Kuan-Hua J.	201510
MA19000	Delworth, Timothy J.	201520
MCMP20400	Aditya, Animesh V.	201520
MCMP20500	Aditya, Animesh V.	Influenced
ME20000	Sojka, Paul E.	201620
ME27000	Nauman, Eric A.	201220
ME27400	Krousgrill, Charles M.	201210

Course	Fellow	Cohort
ME32300	Koslowski, Marisol	201610
ME32300	Krousgrill, Charles M.	Influenced
ME32300	Zhao, Kejie	201620
ME57000	Zhao, Kejie	Influenced
ME57700	Nauman, Eric A.	Influenced
MET11100	Efendy, Eddy	201530
MET14400	Denton, Nancy L.	201610
MET16200	Kraebber, Henry W.	201520
MET21100	Efendy, Eddy	Influenced
MET21300	French, Richard M.	201220
MET22000	Hutzel, William J.	201720
MET23000	Garcia Bravo, Jose M.	Influenced
MET24500	Garcia Bravo, Jose M.	201520
MET24500	Rakita, Milan	201520
MET28400	Richards, Grant P.	Influenced
MET33400	Garcia Bravo, Jose M.	Influenced
MET34600	Wang, Xiaoming	201710
MET40100	Berry, Frederick C.	201710
MET40200	Berry, Frederick C.	Influenced
MET45100	Kraebber, Henry W.	Influenced
MET49000	Berry, Frederick C.	Influenced
MET49000	Rakita, Milan	Influenced
MET50300	French, Richard M.	Influenced
MET52700	Clase, Kari L.	Influenced
MET58100	French, Richard M.	Influenced
MET58100	Garcia, Esteban	Influenced
MET58100	Huston, Davin H.	Influenced
MFET24800	Diao, Xiumin	201720
MFET34400	Rakita, Milan	Influenced
MFET34800	Diao, Xiumin	Influenced
MFET48000	Berry, Frederick C.	Influenced
MGMT17500	Dugan, Mary M.	201320
MGMT17500	Kirkwood, Harold P.	201320
MGMT17500	Stonebraker, Ilana R.	201320
MGMT19000	Stonebraker, Ilana R.	Influenced
MGMT20000	Trax, Rebecca P.	201320
MGMT29000	Putman, Cara C.	201810
MGMT29500	Landis, Maureen L.	201310
MGMT30100	Landis, Maureen L.	201310
MGMT35100	Conroy, Paula J.	201810
MGMT36100	Kalish, Julia A.	201310
MGMT38200	Dejoie, Roy M.	201310
MGMT39000	Dejoie, Roy M.	Influenced
MGMT44428	Chupp, Brian K.	201720
MGMT48400	Makadok, Richard J.	201710
MUS32400	Cayari, Christopher P.	201720
NRES25500	Graveel, John G.	201210
NRES25500	Mashtare, Michael L.	201710
NRES25500	Van Scoyoc, George E.	201210
NRES49800	Zanotti, Laura C.	Influenced
NUPH49100	Weatherman, Kara D.	201610
NUPH49200	Weatherman, Kara D.	Influenced
NUPH49300	Weatherman, Kara D.	Influenced
NUPH49400	Weatherman, Kara D.	Influenced
NUPH49500	Weatherman, Kara D.	Influenced
NUR10800	Kuebler, Sandra J.	201610
NUR10800	Simpson, Vicki L.	201220
NUR21700	Kirby, Kristen F.	201610
NUR21801	Kirby, Kristen F.	Influenced

Course	Fellow	Cohort
NUR21801	Kuebler, Sandra J.	201610
NUR21901	Davis, Jan E.	201720
NUR21901	Hannigan, Elaine C.	201720
NUR22001	Kirby, Kristen F.	201610
NUR22201	Richards, Elizabeth A.	201320
NUR22301	Chang, Chyi-Kong K.	201220
NUR22301	Thorlton, Janet R.	201220
NUR22401	Berg, Abby	201810
NUR22401	Schafer, Kathleen M.	201810
NUR22501	Berg, Abby	201810
NUR22501	Schafer, Kathleen M.	201810
NUR31401	Walters, Becky S.	201420
NUR31701	Ajuwon, Abidemi M.	201720
NUR31701	Dye, Deborah K.	201720
NUR39900	Kuebler, Sandra J.	Influenced
NUR41200	Spoerner, Deborah A.	Influenced
NUR41401	Spoerner, Deborah A.	201510
NUR41601	Nagle, Amy M.	201510
NUR41701	Hountz, Diane L.	201810
NUR41701	Karagory, Pamela M.	201810
NUR61100	Spoerner, Deborah A.	Influenced
NUR62400	Thorlton, Janet R.	Influenced
NUR63200	Thorlton, Janet R.	Influenced
NUTR30300	Burgess, John R.	201310
NUTR33000	Bailey, Regan K.	201810
OBHR33000	Ying, Jonathan G.	201810
OLS28400	Lybrook, Daniel O.	Influenced
OLS34600	Naimi, Linda L.	Influenced
OLS38600	Hurt, Andrew C.	201510
OLS47700	Naimi, Linda L.	Influenced
OLS48400	Russell, James M.	201810
OLS57900	Clase, Kari L.	Influenced
OLS58000	Naimi, Linda L.	Influenced
OLS58100	Naimi, Linda L.	Influenced
PHIL23000	Purpura, Ashley M.	201520
PHIL26000	Yeomans, Christopher L.	201420
PHIL33000	Purpura, Ashley M.	201520
PHRM46100	Clase, Kari L.	Influenced
PHRM84400	Isaacs, Alex N.	Influenced
PHRM84400	Kaakeh, Yaman	Influenced
PHYS17200	Hirsch, Andrew S.	201220
PHYS21800	Todd, Brian A.	201310
PHYS27200	Carlson, Erica	201520
PHYS52600	Lyanda-Geller, Yuli	201810
POL10100	Chapman, Valeria S.	201610
POL10100	Mccann, James A.	201210
POL13000	Clark, Ann M.	201410
POL14100	Woods, Dwayne	Influenced
POL23500	Woods, Dwayne	201320
POL30000	Waltenburg, Eric N.	201420
POL34700	Mustillo, Thomas J.	201720
POL37200	Waltenburg, Eric N.	Influenced
POL41100	Browning, Robert X.	201420
POL41300	Clawson, Rosalee A.	201220
POL42900	Waltenburg, Eric N.	Influenced
POL43000	Clark, Ann M.	Influenced
POL60000	Clawson, Rosalee A.	Influenced
PSY12000	Hollich, George J.	201210
PSY23500	Hollich, George J.	201620

Course	Fellow	Cohort
PSY24000	Williams, Kipling D.	201810
PSY29200	South, Susan C.	Influenced
PSY34200	South, Susan C.	201420
PSY35000	Rollock, David	201620
PSY39200	South, Susan C.	Influenced
PTEC10800	Huston, Davin H.	Influenced
PTEC20800	Huston, Davin H.	Influenced
PTEC40800	Huston, Davin H.	Influenced
REL20000	Purpura, Ashley M.	Influenced
REL23000	Purpura, Ashley M.	201520
SA10925	Chen, Yingjie	Influenced
SFS21000	Hallett, Steven G.	Influenced
SFS21100	Hallett, Steven G.	Influenced
SFS30200	Hallett, Steven G.	201620
SFS31300	Hallett, Steven G.	Influenced
SFS31500	Hallett, Steven G.	Influenced
SOC10000	Burbrink, Mary J.	201220
SOC10000	Hillis, Rolden S.	201310
SOC22000	Hillis, Rolden S.	Influenced
SOC41900	Hoffmann, Elizabeth A.	201510
SPAN10100	Neary-Sundquist, Colleen A.	201410
SPAN33000	Hart, Patricia	201710
SPAN40100	Tenorio, Cecilia I.	201410
STAT11300	Gundlach, Ellen	201220
STAT30100	Cayon, Laura	201320
STAT35000	Sellke, Sarah H.	201410
STAT50100	Colver, Tadd N.	201510
STAT50300	Qin, Tiantian	201420
TECH12000	Connolly, Patrick E.	201310
TECH12000	Koch, Daphene C.	201310
TECH12000	Laux, Dawn D.	201310
TECH12000	Mentzer, Nathan	201310
TECH32000	Lybrook, Daniel O.	201410
TECH69500	Hutzel, William J.	Influenced
TECH69700	Vorvoreanu, Mihaela	Influenced
THTR20100	Ebarb, Joel R.	201310
THTR20100	Fliotsos, Anne L.	201310
THTR35300	Huston, Davin H.	Influenced
TLI11100	Elliott, Stephen J.	201530
TLI11100	Schmidt, Edie K.	Influenced
TLI21300	Lybrook, Daniel O.	Influenced
TLI21400	Scott, Regena L.	Influenced
TLI25300	Kirchner, Michael J.	201720
TLI25400	Hurt, Andrew C.	201510
TLI25500	Akdere, Mesut	201810
TLI26500	Asunda, Paul A.	201620
TLI31300	Elliott, Stephen J.	Influenced
TLI33400	Sutton, Mathias J.	Influenced
TLI45700	Naimi, Linda L.	201710
TLI52100	Clase, Kari L.	Influenced
TLI52200	Clase, Kari L.	Influenced
TLI52400	Clase, Kari L.	Influenced
WGSS28000	Boisseau, Tracey J.	201610
WGSS28000	Cooky, Cheryl A.	201410
WGSS28200	Boisseau, Tracey J.	Influenced
WGSS39000	Mitchell, Silvia Z.	Influenced
WOST28000	Boisseau, Tracey J.	201610
WOST28000	Cooky, Cheryl A.	201410
WOST28200	Boisseau, Tracey J.	Influenced

Course	Fellow	Cohort
YDAE49100	Russell, Mark A.	Influenced

[1] Transformation model frequency of use is based on the number of students, from all IMPACT sections of AY2017 courses, exposed to each model. 1.9% of the transformation models from AY2017 IMPACT sections were not reported. The general transformation models are characterized based on these questions:

	Online-Only	Replacement	Supplemental
Q1. Does section have any face-to-face in-class time?	No	Yes	Yes
Q2. Does the section include any decrease of face-to-face in-class time?	--	Yes	No

[2] FLCs offered each semester from summer 2011 through fall 2017.

[3] An FLC participant is counted only once, regardless of the number of times s/he participated in the IMPACT FLC. IMPACT Fellows participating more than once include (a) faculty transforming additional course(s), and (b) faculty wishing to "refresh" the transformation of the same course.

[4] At least one IMPACT Fellow has a primary appointment in each of the 12 colleges/schools.

[5] A course is counted only once, regardless of the number of IMPACT Fellows involved in the course transformation. A course is also counted only once if:

- The course was renamed (ex: EAS10400 is now EAPS10400, but both courses are tracked as EAPS10400 in analysis of the data.)
- Multiple courses are cross-listed. (ex: PHIL23000 and REL23000 are cross-listed, but tracked and reported as the single course "PHIL23000&REL23000."

[6] In cases where one Fellow reports an IMPACT-Influenced course previously transformed by another IMPACT Fellow, the course is reported here as an IMPACT course, to avoid duplicate of counts.

Some IMPACT Fellows report applying what they learned in the FLC to other courses, but not completing a course transformation. These cases are not tracked in the data. From an ELRC survey of IMPACT Fellows, 88% of survey respondents reported the experience of being an IMPACT faculty fellow has influenced the way in which they teach other courses.

[7] Cumulative faculty fellows counted by calendar year. Each Fellow is counted only once, regardless of the number of courses they transform, or number of time they participated in the IMPACT FLC.

[8] Cumulative course transformations counted by calendar year, and includes IMPACT-Influenced courses, as reported by IMPACT Fellows. Each course is counted only once, based on the first term it was reported as an IMPACT or IMPACT-Influenced course, regardless of the number of IMPACT Fellows associated with the course.

[9] Courses classified as 'other' are not associated with an academic college, and include courses from Honors College and the Graduate School.

[10] Proportion based (N_{IMPACT} / N_{All}) where:

- N_{IMPACT} is the count of unique students with at least one IMPACT experience for a course numbered between 10000 and 49999, and
- N_{All} is the count of unique students with at least one registration in any course numbered between 10000 and 49999.

[11] Counts and Proportions of students exposed to IMPACT, *within* Academic Years

Academic Year	Students Exposed to IMPACT within AY	
	Count	Proportion
2011-2012	6147	19.2%
2012-2013	13564	43.3%
2013-2014	17631	57.6%
2014-2015	20269	66.6%
2015-2016	22684	72.5%
2016-2017	24245	76.1%

[12] Faculty perceptions based on data gathered, analyzed, and reported by ELRC staff in the internal report "Annual Report Briefing 2016, Cumulative Analysis." Data collection includes surveys, focus groups, and interviews with IMPACT FLC participants.

[13] Statistically significant increases as $p<.05$. The percentage indicates the rate or survey participants who "Agreed" or "Strongly agreed" with the statement in the post-test survey.

[14] Student Centeredness by Student and Transformation Model, Spring 2014 to Spring 2017[14]

SC Level	IMPACT Transformation: Online Only *n*	Online Only %	Replacement *n*	Replacement %	Supplemental *n*	Supplemental %	Unknown *n*	Unknown %	Total *n*	Total %
Low	204	37.9%	1087	16.0%	4186	19.7%	86	19.9%	5563	19.2%
High	334	62.1%	5706	84.0%	17057	80.3%	347	80.1%	23444	80.8%
Total	538		6793		21243		433			

[15] Correlation of Student Centeredness to Final Grade, Spring 2014 to Spring 2017[15]

		IMPACT Transformation: Online Only	Replacement	Supplemental	Unknown	Total
Mean Student Centeredness, By Final Grade	Overall	4.7	5.4	5.3	5.2	5.3
	A+/A/A-	5.1	5.6	5.6	5.4	5.6
	B+/B/B-	4.6	5.3	5.2	5.2	5.2
	C+/C/C-	4.4	5.2	4.9	4.9	5.0
	D+/D/D-	4.1	5.1	4.8	4.2	4.8
	F	3.9	4.9	4.6	5.0	4.6
Correlation	*R*	.222	.145	.209	.174	.200
	N	535	6687	21099	432	28755
	P	<.001	<.001	<.001	<.001	<.001

[16] We do not have a list of departmental or college controlled learning spaces, including classrooms, labs, etc. For purposes of this report, these spaces were coded as "not-active learning."

[17] In this rate of registrations, one registration is equal to one student per course, regardless of whether the student was required to register for more than one section type. For example, if students in ABC10100 were required to register for a lecture and a recitation, then this was counted as one registration; furthermore, if either the lecture or recitation were in an active learning space, then the registration was counted as an active learning experience.